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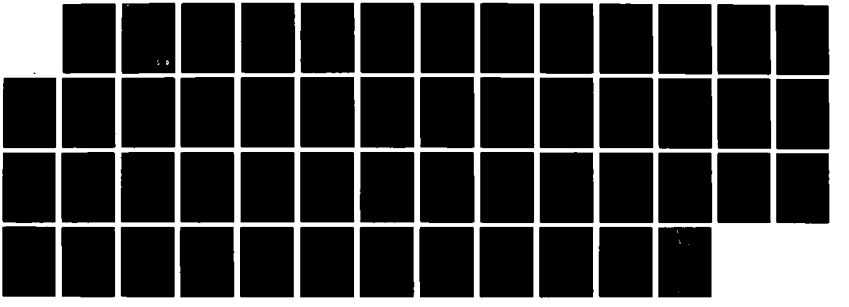

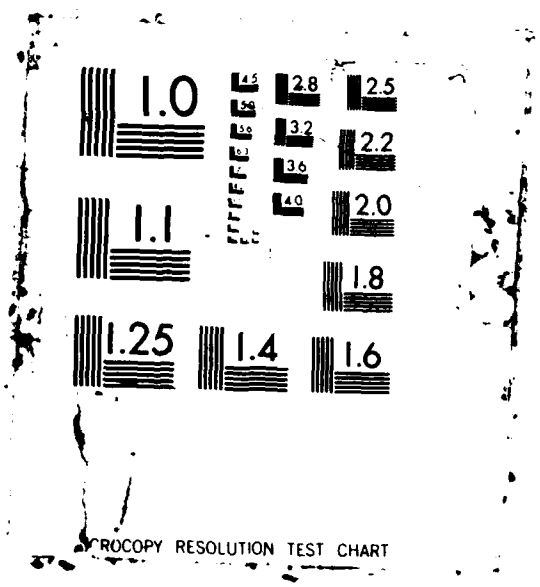
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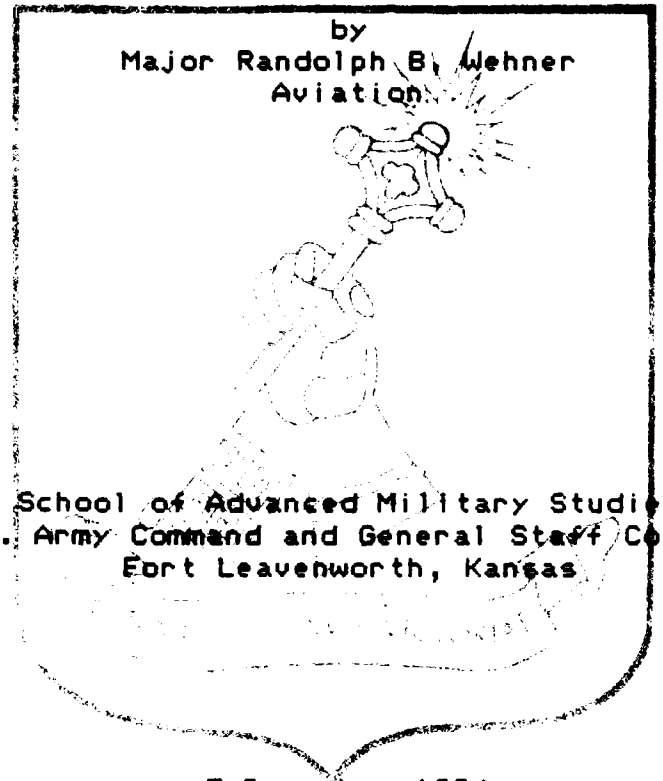
Command and Control of the Divisional Aircraft Maintenance Company: Was It Broken? Should We Have Fixed It?

by
Major Randolph B. Wehner
Aviation



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This monograph discusses and analyzes command and control relationships for the divisional aircraft maintenance company to determine which relationship provides the most responsive support.

First, a historical review and analysis is provided of Army divisional aviation support maintenance organizations and their command and control leading up to the Army of Excellence structure. This analysis explains the evolutionary and cyclical nature of the division's aviation support maintenance command and control structure to provide a perspective for determining the best structure for today. Next, the doctrinal mission and responsibilities of the aviation maintenance company are investigated along with AirLand Battle sustainment requirements to show the critical importance of responsive aircraft support maintenance. Experiences of aviation commanders and operators are reviewed and analyzed. Opinion surveys taken in 1967 and 1973 demonstrate the continuing controversy of the aviation maintenance company command and control issue. (Continued other side of form)

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19. Continued. Finally, advantages and disadvantages of the current and alternative command and control structure within the division are identified and analyzed to recommend a structure that provides the most responsive support from the aviation maintenance company.

This monograph concludes that the most responsive support is achieved with the command and control of the aviation maintenance company not under the division support command, but rather under its only customer--the combat aviation brigade. This recommended force structure improvement can be made at no cost in personnel spaces or equipment. The aviation maintenance company should be reassigned to the combat aviation brigade as soon as possible to regain the historically proven benefits of this most responsive support structure.

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ABSTRACT

COMMAND AND CONTROL OF THE DIVISIONAL AIRCRAFT MAINTENANCE COMPANY: WAS IT BROKEN? SHOULD WE HAVE FIXED IT? by MAJ Randolph B. Wehner, USA, 44 pages.

This monograph discusses and analyzes command and control relationships for the divisional aircraft maintenance company to determine which relationship provides the most responsive support.

First, a historical review and analysis is provided of Army divisional aviation support maintenance organizations and their command and control leading up to the Army of Excellence structure. This analysis explains the evolutionary and cyclical nature of the division's aviation support maintenance command and control structure to provide a perspective for determining the best structure for today. Next, the doctrinal mission and responsibilities of the aviation maintenance company are investigated along with AirLand Battle sustainment requirements to show the critical importance of responsive aircraft support maintenance. Experiences of aviation commanders and operators are reviewed and analyzed. Opinion surveys taken in 1967 and 1973 demonstrate the continuing controversy of the aviation maintenance company command and control issue. Finally, advantages and disadvantages of the current and alternative command and control structure within the division are identified and analyzed to recommend a structure that provides the most responsive support from the aviation maintenance company.

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COMMAND AND CONTROL OF THE DIVISION'S AIRCRAFT MAINTENANCE COMPANY: WAS IT BROKEN? SHOULD WE HAVE FIXED IT?

Introduction

Since Army Aviation began, with the creation of the Air Force under the provisions of the National Security Act of 1947, there has been a need for some type of aviation support maintenance capability within the Army. There have been numerous attempts at defining the best structure and organizational command and control relationship that such an aviation support maintenance structure should take.

A divisional aviation support maintenance unit was originally organized in the late 1950's as a detachment under the division's transportation unit and later reorganized in the early 1960's as a company under the division support command's (DISCOM) maintenance battalion. During the Vietnam War a new organizational concept was tested which attached the company directly to the division's aviation unit. By 1977 this concept was adopted Army-wide. The Division 86 structure retained this relationship with the support maintenance organic to the new Cavalry Brigade Air Attack (CBAA). However, by 1985, because of combat service support realignments precipitated by the Army of Excellence (AOE) force restructuring, the aviation maintenance company was reassigned back to the DISCOM.

The decision to put aviation support maintenance back into the DISCOM has been controversial in both the aviation and logistics communities. The official Army rationale for moving the aircraft maintenance company to the DISCOM was to eliminate a battalion headquarters in the combat aviation brigade (CAB), relieve the CAB of the responsibility of conducting two levels of maintenance, and provide a single support maintenance manager within the division. (1) While moving the aviation support maintenance to the DISCOM has achieved the first two results, it has not provided a single maintenance manager for all division equipment. Two divisional units, the military intelligence battalion and signal battalion, still have organic units that provide the battalions' support maintenance on specialized equipment. (2) It was this same situation of self-support for specialized equipment that existed in divisional combat aviation battalions and brigades prior to the AOE structure. Like military intelligence and signal commanders, aviation unit commanders and aviation maintenance officers depend on responsive, specialized maintenance support. Many members of the aviation community think the current divisional AOE structure interferes with this vital responsive aircraft maintenance support. They want division aircraft maintenance restructured to reassign the aircraft maintenance company where it can provide the most responsive support--directly under its only customer--the divisional combat aviation brigade. This paper will examine this issue by answering the question: What is the

organizational command and control relationship that will provide the most responsive support from the aircraft maintenance company?

First, a historical review and analysis will provide the background of Army divisional aviation support maintenance organizations and their command and control (C^2) leading up to the current AOE structure. This analysis will explain the evolutionary and often cyclical nature of the division's aviation support maintenance C^2 structure to provide a perspective for determining the best C^2 structure for today. Next, the doctrinal mission and responsibilities of a divisional aviation maintenance company are analyzed. The special aircraft maintenance company (AMC) C^2 requirements for sustaining AirLand Battle are investigated to show the critical importance of having responsive aircraft support maintenance. "Real world" experiences of Aviation commanders and operators as presented in after action reports, end of tour reports, and field tests are reviewed and analyzed to show timeliness, validity, and the importance of the issue. Opinion surveys taken in 1965 and 1973 and reports of actual Vietnam combat experience with aviation support maintenance C^2 will demonstrate the timelessness and continuing controversy of the AMC C^2 issue. Finally, advantages and disadvantages of the current and alternative AMC C^2 structure within the division are identified and analyzed to recommend an AMC C^2 structure that provides <u>responsive support</u>.

HISTORY OF DIVISIONAL ARMY AVIATION MAINTENANCE ORGANIZATION AND C2

Army Aviation had its foundation with the National Security Act of 1947 which formally separated Army Ground Forces and Army Air Forces into the Department of the Army and the Department of the Air Force. (3) Initially the Army had approximately 400 total divisional and non-divisional aircraft and was dependent on the Air Force for all aircraft maintenance above organizational level. (4)

Maintenance dependence lasted for almost three years until the 1949 implementation of Joint Army and Air Force Adjustment Regulations (JAAFAR) 4-11-2, Administrative Provisions to Govern Field Maintenance Activities for Army Aircraft and Related Items of Equipment. (5) Based on this JAAFAR regulation the Army assigned increased aircraft logistical support responsibilities to the Ordnance Corps. Five ordnance light aircraft field maintenance units were activated and assigned to each field army to provide third echelon aircraft maintenance support. Higher levels of support continued to be provided by the Air Force. In 1948, divisions each still had fewer than 20 aircraft spread primarily between division artillery and division headquarters. First and second echelon maintenance was done by the decentralized, organic division aviation detachments.

Aircraft density in the Army increased sharply after 1948 rising to 2,053 aircraft by 1953. (6) Division aviation remained decentralized throughout various division units. In 1953 Army

aviation logistics responsibility was transferred from the Ordnance Corps to the Transportation Corps and the transportation army aircraft maintenance company was formed to replace the Ordnance units. (7) However, third echelon maintenance was still conducted outside the divisions, in the field army.

Between 1954 and 1958, a series of new divisional organizations were tested. The first of these was the unique "Atomic Test Field Army" (ATFA) concept. Within the ATFA divisions, for the first time, all aircraft were centralized into one unit, a combat aviation company. The combat aviation company performed only first and second echelon maintenance, however; all third echelon was still performed by the field army.

Immediately after the ATFA tests, a second set of division organizations were examined. These were referred to as the Reorganization Current Infantry Division (ROCID), Reorganization Current Armored Division (ROCAD), and Reorganization The Airborne Division (ROTAD). All aircraft and all first and second echelon maintenance remained centralized in a combat aviation company. (8) Apparently the tests of the aviation organization within the ROCID, ROCAD, and ROTAD divisions were accepted, because the new divisions implemented in 1958 reflect this design. (9)

The next major change in the divisional aviation maintenance organization and structure occurred in 1959. The 1959 version of FM 1-100, Army Aviation, discussed a Transportation Corps aircraft maintenance unit that was organic to each division. (10) This detachment was organic to the Infantry Division

transportation battalion and the Armored Division trains. (11) Third echelon aviation maintenance capability was now organic to the division for the first time. Some divisions actually placed the new detachment OPCON to the aviation company commander. (12) A recurring cycle had begun, in which division aviation support maintenance would be passed back and forth from pure aviation to logistical units.

In 1960, the first field manual applicable to aircraft organizational maintenance, FM 1-10, Army Aviation Organizational Aircraft Maintenance and Supply was published. Unfortunately, it did not clarify the split aircraft maintenance responsibility in the division. (13)

The next major change occurred in the early 1960's with the Reorganization Objective Army Division (ROAD). The major aviation difference from the ROCID family of divisions was the decentralized C2 of aviation among seven different units in the ROAD and a doubling of aircraft density (49 ROCID to 103 ROAD). (14) The significant aviation maintenance change was the formal assignment of the transportation aircraft maintenance company to the maintenance battalion of the division support command (DISCOM). (See figure 1, page 35) (15) Aviation organizational (1st and 2d echelon) maintenance was also in seven different units, all of which had to coordinate with the DISCOM for third echelon (by then called direct support) maintenance.

The ROAD structure was a period in aviation maintenance history when an aviation support maintenance C2 structure

consolidated under DISCOM was logical and provided the most responsive support. With several separate aviation sections and units under several different commanders competing for the limited aviation support maintenance resources, it was logical to have a DISCOM commander in centralized command and control of the TAMC. Later, however, a better way of organizing and structuring aviation assets evolved.

The ROAD aviation organization lasted until 1977 when the Aviation Requirements for the Combat Structure of the Army (ARSCA III) study was completed. Part of this study investigated the efficiency of "pooling" all division aviation assets, including direct support aircraft maintenance, into one battalion size unit. As a result, the transportation aircraft maintenance company (TAMC) moved from the DISCOM directly under the new aviation battalion commander. (See Figure 2, page 35) Results of ARCSA III were outstanding. "Pooling" increased aircraft availability 10-15%, personnel requirements were reduced, and maneuver units were relieved of the aviation logistics burden. Safety, standardization, and proficiency training were all improved. High dollar maintenance and support equipment were also reduced and consolidating Prescribed Load Lists (PLL) improved supply operations. (16) As a result of ARCSA III, divisions began reorganizing aviation assets into aviation battalions with organic TAMC's in the late 1970's.

Also in the late 1970's, an Army wide study to restructure the entire division for the 1980's was in progress. The Division 86 restructuring effort was designed

> . . . to draw from advanced battlefield concepts, to integrate technologically advanced material systems, and to optimize human resources to be able to synthesize the design of heavy forces that would be capable of destroying the threat of NATO. (17)

A revolutionary outcome of this effort was the design of the Air Cavalry Attack Brigade (ACAB) which was later renamed the Cavalry Brigade - Air Attack (CBAA). This brigade-sized aviation element consisted of a headquarters and headquarters company, a combat support aviation battalion (CSAB), one or two (depending on theater) attack helicopter battalions, and the division cavalry squadron. The CSAB contained the transportation aircraft aviation maintenance company (TAMC) as well as a general support aviation company (GSAC), a combat support aviation company (CSAC), and a combat electronic warfare and intelligence aircraft company. (See figure 3, page 36). The TAMC provided direct support level maintenance (now called aviation intermediate maintenance (AVIM)) for the entire brigade which, like the ARCSA III battalion, contained all division aircraft. But there was a difference in this new brigade C2 structure which later caused problems with obtaining responsive support.

The ARSCA III force structure had preserved the TAMC as a separate company answering to the aviation battalion commander and providing responsive support to the entire battalion. But the CBAA designers had structured the TAMC under the C2 the

combat support aviation battalion, which also had three aviation companies of its own that were TAMC customers. The natural perception of the other two battalions in the CBAA was that the TAMC placed a higher priority on support of its parent battalion's organic aircraft than of the other customer units within the brigade. Indeed, under this C2 structure, it would have taken a special effort by anyone to avoid even the perception of favoritism. This perception, accurate or not, was highlighted during the formal CBAA test. (18) Apparently, the CBAA structure designers, in order to reduce the brigade commander's span of control and consolidate separate companies under a battalion headquarters, had inadvertently interfered with the sound, proven, responsive aircraft support maintenance structure of ARCSA III. Force designers could have corrected this aviation maintenance C2 problem merely by shifting the TAMC out of the CSAB as a separate company under the brigade, thereby providing equitable, responsive support to all brigade units. But the latest and biggest change in the entire Division 86 structure hit -- Army of Excellence. The C2 of the TAMC went back to the DISCOM. (See figure 4, page 36).

AOE force structure was designed to meet an identified need ". . .for a fighter-heavy, more deployable force that could be delivered with minimum resources, and would represent a credible force on the future's most likely battlefield." (19) The results of the overall AOE changes from the Division 86 structure,

> . . . sliced more than fifteen percent of the personnel from the structure along with significant amounts of material. Whenever possible, the decrements were made in the support and service support areas in order to maintain combat power . . . The overriding guidance was that these existing designs (Division 86) were fundamentally sound, but savings must be realized. (20)

The first AOE TAMC change was implemented in the Light Division structure. The decision to move the TAMC out of the Light Division CAB into the DISCOM was made in September 1983 by the Training and Doctrine Command (TRADOC) Commander. Later in 1983 the Chief of Staff of the Army standardized this AMC C2 relationship for all Heavy and Light Divisions. (21)

The shift of the TAMC back to the DISCOM allowed AOE planners to justify deleting the entire battalion headquarters of the CBAA's (now the combat aviation brigade) CSAB, and save the resultant spaces. They also shifted approximately 50 maintenance personnel spaces into the AMC. This further reduced the CAB's strength, but made it more dependent on the AMC. As will be shown in another section of this paper, many aviation commanders feel this shift of the TAMC C2 had a significant negative impact on obtaining responsive support for AVIM maintenance. This shift ignored the lessons learned from ARCSA III's experience with an organic TAMC, as well as the CBAA test results.

The most recent revision involves a name change. The transportation aircraft maintenance company (TAMC) was changed to Aircraft Maintenance Company (AMC), based on the 1983 separation of the Aviation Logistics School from the Transportation School.

The history of divisional Army aircraft support maintenance C^2 has been evolutionary and cyclical as force designers struggled to balance the demands for responsive support with force constraints such as "smaller but better." Occasionally in its history, the C^2 of aviation maintenance units has been structured logically to provide the most responsive support. The logic of the decentralized ROAD aviation structure dictated a centralized TAMC under an "honest broker" in the DISCOM. The logical placement of the TAMC as a separate company under the ARCSA III division aviation battalion, which had all aviation assets "pooled," provided responsive support. The ACAB/CBAA force structure concept for TAMC C^2 was logical, because it kept aviation support maintenance organic to its only customer, where it could provide responsive support. Unfortunately, today under AOE the past proven logic in structuring the C^2 of the AMC to provide the most responsive support is missing.

AMC DOCTRINAL MISSIONS AND C^2 REQUIREMENTS UNDER AIRLAND BATTLE

Army Aviation has been going through dramatic growth and changes in the past few years as aviation's capabilities, potential, and importance on the AirLand battlefield have been recognized. Technology has changed with the rapid fielding of sophisticated new aircraft such as the UH-60 Blackhawk utility helicopter, the CH-47 D Chinook cargo helicopter, and the AH-64 Apache attack helicopter. As discussed previously, aviation

organization structures have dramatically changed with the formation of the Cavalry Brigade Air Attack (CBAA) under Division 86 and the Combat Aviation Brigade (CAB) under AOE. Aviation employment concepts have changed and are continuously under refinement to best utilize Army Aviation's tremendous potential in combat, combat support, and combat service support roles.

One aspect of Army Aviation that has not changed, except to become even more critical under the challenge of the AirLand battle, is the importance of sustaining aviation operations with the right quality and quantity of responsive aircraft maintenance support. The more sophisticated aviation technology becomes, the more vital the role of aircraft maintenance.

The Army's capstone how-to-fight doctrinal manual, FM 100-5, Operations, recognizes the importance of maintenance with the key sustainment function of "fixing". In defining the importance of the "fixing" role, FM 100-5 says,

> . . . time will be critical and replacement equipment will be scarce. The force which is better able than its opponent to recover damaged equipment and return it to service rapidly will have a clear advantage . . . Good maintenance practices in all units, forward positioning of maintenance units, stocks of repair parts and replacement equipment, and well understood priorities for recovery and repair may spell the difference between tactical success or failure. (22)

These elements of "fixing", such as good maintenance practices, forward positioning of support units, repair parts and replacements, and well established priorities are also the essence of responsive support for aviation maintenance.

FM 1-500, Army Aviation Maintenance, the doctrinal manual for aviation maintenance, specifies the mission of aviation "fixing "at the AMC in support of AirLand Battle doctrine: " . . . to provide the commander on the battlefield with the maximum number of fully mission-capable aircraft." (23) To accomplish this mission, the AMC must perform many functions other than AVIM level maintenance. All of these functions require close coordination through the shortest C2 channels possible to provide the most responsive support. One of the more frequent and important functions is providing backup aviation unit maintenance (AVUM) in the division and main battle areas through forward support maintenance teams. This is even more necessary since the AOE restructure effort mentioned earlier, which shifted approximately 50 mechanics from AVUM units to the AMC. The implication is that the AVIM level AMC is even more critical to the CAB, since the aircraft systems still require the same amount of AVUM level maintenance but the CAB has fewer mechanics of its "own" to do the work. AVUM level maintenance is primarily scheduled maintenance which requires intense management and coordination to avoid "overflowing" a fleet of aircraft and overloading maintenance.

Other AMC functions include maintaining the division's Class IX (AIR) warehouse and authorized stockage list (ASL) and providing a direct exchange (DX) program. Both of these require daily face-to-face contact and close coordination with the CAB customers. The ASL function also requires frequent contact with

the DISCOM material management center, primarily for computer tape updates.

The AMC provides backup aircraft recovery support for the AVUM units. Facing the high threat level of AirLand Battle, this recovery function will be a major time consumer in managing scarce recovery assets and rigging and transporting damaged aircraft. It will constantly require the closest possible coordination and C2 between the CAB and AMC, and now, under AOE, the DISCOM.

Two more AMC functions that require close customer coordination and centralized management to insure responsive support are controlling and monitoring cannibalization and maintaining and managing the division float assets. Cannibalization will be a key source of critical repair parts during fast paced operations. Operationally ready float aircraft are especially important to replace crash damaged or severely combat damaged aircraft. (24)

This partial list of missions and functions shows that the division's AMC, though under the C2 of the DISCOM, is the key player in providing responsive support to the division's aircraft centralized in the CAB. Additionally, it is important to note some of the doctrinally required C2 relationships for the AMC in providing responsive support to its <u>only</u> customer. The AMC must operate with reasonable response time to the CAB. In fact, in garrison during peacetime, practically every AMC in the world is collocated with the division CAB on the division's primary

airfield. On the battlefield, the AMC sets up in the division support area, as close to the AVUM sites as practicable to minimize transporting non-flyable aircraft. The AMC's zone of action is the same as the CAB, but its base of operations may not lie within it. Finally, the CAB sets AVIM priorities for the AMC, and the AMC furnishes liaison to the CAB.

This brief overview of AMC missions, functions, and doctrinal C2 requirements helps illustrate the degree of dependence of the CAB on the AMC for responsive support. Doctrinal coordination requirements between the AMC and the CAB help highlight the exclusivity of the AMC-CAB relationship and help show that the extra C2 level in the DISCOM chain of command could be an impediment to responsive support. The next section provides actual peacetime and wartime experiences with these doctrinal requirements and how various cycles of the AMC C2 structure have actually worked from a user's perspective.

FIELD EXPERIENCE WITH AOE DIVISION AMC'S

Since the beginning of AOE in 1983 several divisions, both in CONUS and OCONUS, have reorganized into AOE organizations and amassed experience with AOE aviation support structure. The first new Light Division with an AOE design CAB has undergone certification and detailed analysis. Simultaneously, the United States Army Aviation Center (USAAVNC) at Fort Rucker has consolidated the variety of field experiences and expanding

Aviation Branch expertise into formal positions on aviation organization C2 structure. These sources have provided feedback and published opinions and ideas on what works and what doesn't in providing responsive support for aviation.

What do the people who know aviation best, the aviation doctrine writers at the "school house" and the users in the field, have to say about AOE Aviation specifically in regards to the AMC C2? First, the USAAVNC in their latest Aviation Mission Area Development Plan (AVNMADP) Update submitted to the U.S. Army combined Arms Center identified that:

> . . . organizational changes resulting from the Army of Excellence design effort have created additional organizational deficiencies.

The first of these deficiencies listed include AVIM maintenance performed by the AMC:

> Fielding Heavy Division Aviation Brigades without organic AVIM maintenance capability. AVIM maintenance companies were relocated from aviation brigades to the DISCOM during AOE redesign efforts. This complicates CAB CSS by removing support from the user's control and adding additional command layers between the user and supporting organizations. (25)

Aviation unit commanders have had to deal with the current CAB and AMC organization daily. Here is a sample of their concerns and experiences. The first is an excerpt from the end of tour report after two years of commanding an AOE CAB from the outgoing CAB Commander of the 1st Cavalry Division (the first CAB in a Heavy Division) at Fort Hood dated 4 June 1986:

> The alignment of the transportation (sic) Aviation Maintenance Company (TAMC) under the DISCOM was a mistake. The expertise in aviation maintenance

> management clearly lies in the CAB. With the TAMC under CAB control, a single headquarters was responsible for all associated aviation maintenance and any perceived conflicts of interest were eliminated. A memorandum of understanding delineating roles of both the CAB and DISCOM as regards the TAMC was signed by both brigade commanders. Although the current commanders of the CAB and DISCOM enjoy an exceptionally cooperative relationship, this can change rapidly and lead to a disfunctional situation. (26)

The 1st Cavalry division DISCOM Commander who commanded the TAMC mentioned above was interviewed in order to get a full and balanced view of the AOE experience. He stated that there was, "No objective basis for the decision . . ." to put the AMC in either location. He felt that all judgments on the best location for responsive support were subjective and the decision to position the AMC would ultimately depend on the senior man's opinion. As he understood the original rationale for the change of the AMC to the CAB, it was done to relieve the burden on the CAB Commander so he could concentrate on warfighting. In his opinion, the only good argument to keep the AMC under the CAB was in times of constrained personnel resources. He said, ". . . unity of command is best . . . one colonel should be in charge over scarce resources." (27)

The next experienced opinion and observation from the field came from the CAB Commander in 3d Armored Division in his comments on AOE Aviation Structure in a letter to Fort Rucker dated 14 October 1986, in which he states: "Currently, as structured under the Division Support Command, the AVIM is

responsible first to the requirements and taskings of the DISCOM commander and secondly to the Aviation Brigade Commander." (28)

Having seen the comments of two Heavy Division CAB commanders and a DISCOM commander, it is interesting to see what the CAB commander in the 7th Infantry Division (Light) experienced during the recent Celtic Cross IV Light Infantry Division Certification Exercise conducted during the period 12-25 August 1986. In his end of brigade command tour report he writes,

> The TAMC was tied into the DISCOM C3 system and was located with them throughout the exercise. They were just not responsive. We have also experienced problems with responsiveness in the garrison environment. It is clear to me that the TAMC belongs in the CAB. (29)

While still discussing the AMC in the Light Infantry Division, it is appropriate to look at outside observations and comments gathered by evaluators during the 7th ID (Light) 2d Brigade Certification Field Training Exercise (FTX) conducted during May 1986. The evaluators wrote:

> Even though current doctrine puts the AMC under the DISCOM, it has been continually surfaced whether or not it should be there or in the Combat Aviation Brigade. The entire aviation community would like to see the AMC in the brigade. The AMC commander, NCOs, and soldiers would also like to be in the brigade. The reasons cited were: better coordination of training schedules . . .the aviation brigade commanders would have a more personal interest in the well-being of the AMC since they repair the brigade's aircraft. . . the aviation brigade personnel could more closely associate with problems experienced by the AMC and how they would affect the AMC's ability to repair aircraft . . . the AMC could "satellite" off the aviation brigade for several aviation unique requirements (like instructor pilots and flight records management). . . more streamlined chain of command (means) quicker

> response to aviation brigade and the Esprit de Corps and a greater sense of belonging would be more visible if the AMC were under the aviation brigade. (30)

Only three months after the 2d Brigade certification FTX, the entire 7th Infantry Division (Light) underwent a certification FTX. While the above comments reflect the CAB commander's view, it is interesting to note the comments of the Subject Matter Experts (SME) who conducted the certification. The SME's ranged in rank from GS-13 civilians to O-6 military and were direct representatives of TRADOC schools and centers. A SME writes,

> Support required from (sic) Aviation Maintenance Company (AMC) was at a relatively low-level throughout the exercise. However, some coordination problems were observed between the AMC and the CAB. The AMC is an element of the DISCOM and as such is on a different deployment cycle. During the first three days of this exercise it appeared that the coordination between the CAB and the AMC was insufficient. As an element of the DISCOM, the AMC is required neither to attend daily CAB briefings nor to monitor the mission load and resulting maintenance problems in the CAB. Communications between the CAB and the AMC are difficult because of the need for the CAB to coordinate through the AMC chain of command . . . in order to reach the AMC. This function would operate more efficiently if the AMC was placed under the CAB chain of command and the actual physical location based on operational effectiveness. If this reorganization is desired, it is within the purview of the division command structure to implement. (31)

This SME goes on to comment in a later section of the report that, "The goal should be the placement of the AMC where they can best be supported and can best support." (32)

In order to present a balanced position on the AMC assignment issue, the senior CSS certifier, a Colonel from the

Logistics Center, commented with another view in this same certification report. His views are quoted in their entirety.

> The CG, LOGCEN's position [on the AMC assignment] is 'anywhere that it works.' The present CAB commander avows that based on his 24 years of aviation service, he is intimately involved in/concerned with the TAMC being located in the CAB as outlined by the Aviation Logistics School author who is giving his best, integrity oriented position. The present DISCOM commander has no firm position on this topic.
>
> My view would be that it can, in fact, go to either major command and, based on personalities and backgrounds of the key players involved, be made to work.
>
> I would offer a counterview that it remain in the DISCOM since the DISCOM commander is the major logistical operator/maintainer in the division. He should have the required mind-set and maintenance management know-how to fix the aircraft fleet and is structured to handle Class IX (air), AIMI accounts, etc., as a normal logistics function. The CAB commander is seen as a major maneuver commander who might be predisposed to keep the fleet flying-whatever!
>
> Should the decision be made to move the TAMC to the CAB, it should take with it the Class IX (air) account, AIMI, etc., within its structure and provide an aircraft management visibility capability to the DISCOM Division Support Operations Section to keep track of the exact and timely status of the aircraft fleet--the major shoot, move, and communicate asset . . . in the LID [Light Infantry Division]. (33)

These relatively recent thoughts and comments by several key customers and observers of the C^2 of the AMC under the DISCOM are enlightening and show the current extent of the controversy. The great majority of the viewpoints concur that the AMC should be where it can provide the most responsive support--this appears to be in the CAB. This has not been the first time the force

structure placement of the AMC (or its equivalent) has been publicly debated.

The following section will review historical experiences and opinions prior to the latest restructure under AOE. Cycles in opinions have matched the cyclical history of the AMC covered earlier, as operators in the divisions sought the C2 relationship that provided the most responsive support.

FIELD EXPERIENCE WITH PRE-AOE DIVISIONS

By 1965, the ROAD Division restructure had decentralized aviation to the various brigade users and placed the aviation support maintenance unit (the AMC of the time) under the DISCOM Maintenance Battalion. An Air Force Officer attending the Command and General Staff College (CGSC) conducted a survey that year to determine opinions on, among other things, the ROAD aircraft maintenance structure. He surveyed CGSC students experienced in ROAD divisions, division general staff officers, brigade commanders, division artillery commanders, cavalry squadron commanders, aviation battalion commanders, support command commanders and maintenance battalion commanders in each of, at that time, fifteen divisions around the world. Approximately sixty percent of the surveys were answered. The results give an interesting historical perspective on the AMC controversy at the time, over twenty years before today's AMC debate. In the category of aircraft maintenance, the results were:

1. Combat element commanders believe, without reservation, that the current organization is adequate.

2. Approximately eighty percent of support command and maintenance battalion commanders believe the ROAD maintenance concept is sound.

3. Approximately half of the Aviation officers believe the direct support maintenance function should be in the maintenance battalion.

4. Approximately eighty percent of the support command and maintenance battalion commanders are opposed to a proposal calling for the transfer of the transportation aircraft maintenance company to the aviation battalion.

5. Approximately half of the general staff and aviation officers believe the transportation aircraft maintenance company should be transferred to the aviation battalion.

6. One division has transferred the transportation aircraft maintenance company to the aviation battalion. Participants, who are members of this division, state that results are increased aircraft availability and higher quality maintenance. (34)

As part of his survey, the officer had proposed an alternate centralized division aviation unit similar to the aviation battalion of ARCSA III. Under his alternate structure proposal, aviation support maintenance was moved out of the DISCOM maintenance battalion and placed in the centralized aviation structure. Survey respondents were asked to comment on the proposed organization. The following are summaries of the results: 80% of DISCOM and maintenance battalion commanders were for leaving the TAMC in DISCOM's maintenance battalion and 60% of general staff and aviation officers felt that if the aircraft are centralized into an aviation battalion, the TAMC should be

organic to the battalion. 50% of the aviation officers surveyed felt maintenance quality would improve with the TAMC under the aviation battalion, 25% felt the quality of maintenance would not change and 25% felt the quality would be reduced. (35)

From the opinions above, sampled after the ROAD division had been formed for approximately three years, it is obvious there is no consensus but many officers felt that a change in aviation support maintenance structure could better serve the Army. Only three years later, with the rapid aviation buildup in Vietnam in 1968, a better structure was implemented. Writing about an "Eight Point Maintenance Program" to improve Army aircraft availability in their book, Sharpening The Combat Edge: The Use of Analysis to Reinforce Military Judgment, Lieutenant General J. J. Ewell and Major General I. A. Hunt, Jr., include "decentralized maintenance" as one of their key points. They write of moving the TAMC from the ROAD DISCOM location into the aviation battalion with the following results.

> Direct supervision by the aviation officer was greatly facilitated by attaching Company B, 709th Maintenance Battalion, the aviation maintenance company, to the 9th Aviation Battalion. We did this as part of a Department of the Army test that was supervised by the Army Concept team in Vietnam. However, had there been no tests, this step would have been taken because of the necessity to combine as much operations and maintenance as possible [emphasis added]. (36)

Several years after the aviation maintenance community learned these lessons from Vietnam and had more experience with what really worked the best in C2 of an AMC, another survey was taken. This 1973 survey like the previous survey was conducted

by a CGSC student. The student, an aviation maintenance Lieutenant Colonel, surveyed 149 aviators and aircraft maintenance officers attending the 1973-74 CGSC class. Ninety-eight questionnaires were answered. The results revealed that 70% of the respondents, including 67 former aviation company commanders and 17 former aircraft maintenance company commanders shared the opinion that the best structural location for the direct support aircraft maintenance company (TAMC) was assigned to the aviation battalion instead of the DISCOM maintenance battalion. (37) Some of the principal benefits of the TAMC in the aviation unit cited by the survey respondents in order of priority were:

1. Better response to DS requirements will result in improved availability through reduced DS down-time.

2. The added capability of the company will give the AVN BN CO [commanding officer] all the assets necessary to control his operation.

3. Higher quality work will result. (38)

The next major opportunity to gather opinions and data on C2 for the AMC came in 1982 during the independent evaluation of the CBAA conducted by the U.S. Army Combined Arms Center. The CBAA organization constituted a giant step forward in aviation force structure design in most areas. It called for putting the AMC under the CSAB within the CBAA. This organization was not perfect, however, as reflected in the following consolidated comments by senior evaluators and the commander of the CBAA.

> The 9th CBAA after action report stated that the TAMC should be established as a separate company directly under the brigade headquarters . . .
>
> Of the eight senior evaluators, one stated that the TAMC should be a subordinate unit of the CSAB; five recommended leaving the TAMC in the CBAA under the brigade headquarters control; and two recommended it be placed in the forward support battalion. One of the five recommended forming a battalion within the CBAA, which would include all the support elements in the brigade including class III and V.
>
> The test report stated that the TAMC positions in the organizational structure of the CBAA (under the CSAB) inhibited response times and hampered the establishing of maintenance prioritization. Move TAMC under brigade headquarters . . .
>
> The ARCSA III study brought the aviation DS elements under the division aviation [CAB] commander to reduce or bypass traditional logistical echelons. Whether organized under the CSAB or the CBAA, the CBAA commander will continue to set maintenance priorities to insure availability of all CBAA aircraft. The TAMC should remain under the control of the aviation commander and not under the DISCOM commander. [emphasis added] (39)

To illustrate further the controversy that has continued to plague the AMC, a summary from the Independent Evaluation Report for the TAMC which was part of the 1983 CBAA report is worth reviewing. In answer to the question, "How effective is the management structure with the TAMC located in the CSAB for control of AVIM maintenance activities?," the following points were noted:

> Management organization should not be cumbersome nor prevent equal distribution of support . . . The TAMC was located in the CSAB, where the TAMC commander was rated by the CSAB Commander. This contributed to an unequal distribution of support to other CBAA units . . . Six of the seven senior evaluators commenting on the TAMC stated that the TAMC should not be located in the CSAB for the following reasons:

1. The command and operational lines were complicated. There were cross-command supply problems since the TAMC must work with the DMMC for Class IX.

2. There was a perception that the CSAB received priority which contributed to the reluctance of other units to work order aircraft to the TAMC.

3. The TAMC Commander should not be put in a position of working for multiple masters . . .

The problem is <u>where</u> to locate the TAMC. The senior evaluators that recommended the TAMC be moved out of the CSAB were divided as to where it should be relocated (three for a separate company in the CBAA; three for moving it to the DISCOM). (40)

In the final findings for this independent evaluation of the TAMC, conducted as an integral part of the CBAA test, the TAMC evaluator recommended the opposite location from the evaluators and brigade commander looking at the whole CSAB.

That the TAMC performance of CBAA AVIM support is suboptimized when assigned as a subordinate organization to the CSAB. The proponent recommends <u>that the TAMC be located in the DISCOM</u> [emphasis added] . . .

Some of the reasons given for this recommendation were that the CBAA commander would have only one commander for all logistics, that the Class IX (air) support-link with DMMC would be more responsive, and that the CBAA commander could concentrate on fighting and not worry about support. (41)

From the ROAD restructuring with the TAMC in the DISCOM to the present AOE aircraft maintenance company placed back in the DISCOM, the AMC C2 issue has literally gone full circle. Opinions and evaluation results can be found to support virtually any position on this issue. This significant, heavily debated problem seems to defy quantification, such that one C2 structure

cannot be proven statistically or quantifiably better than another because there are just too many uncontrollable variables. Perhaps we are destined to be subjected to the opinion of the senior man present!

The preceding analysis has shown, however, that despite the variety of experience and official and private opinions the majority are weighted generally towards some type of AMC C2 structure in which the senior aviation unit commander in the division commands and controls the AMC.

ANALYSIS AND EVALUATION

The controversy over C2 of the AMC has been spread over the last twenty years. All of the opinions have convinced someone, at some time, on a preferred C^2 structure that provided the most responsive support from the AMC--witness the cyclical swings into and out of the DISCOM and into and out of the aviation unit. A variety of advantages and disadvantages have been revealed from the previous tests, opinion surveys, and end-of-tour reports. There still is no quantifiable evidence derived from aviation maintenance productivity, mission efficiency, or readiness studies that would show one C2 arrangement better than another. This section will identify and analyze additional advantages and disadvantages of current and alternative C2 structures for the AMC in the context of providing the most responsive support. The current C2 structure is the AOE organization with the AMC under

the DISCOM. The alternative C2 structure is the placement of the AMC under the CAB as a separate company, similar to the ARCSA III and Division 86 structure.

Does the current C2 provide the most responsive support? To answer this question it is appropriate to start with the official doctrinal rationale for moving the AMC to DISCOM - That this provides a single maintenance manager. As discussed earlier, the signal and military intelligence battalions perform direct support maintenance as a current exception to the rule. What is key to explore, however, is the implication from the doctrinal rationale that all maintenance principles which apply to wheeled and tracked vehicle maintenance should apply to aircraft maintenance.

Aircraft maintenance is significantly different from maintenance for vehicles and other divisional equipment. Unlike ground equipment which normally goes to direct support maintenance only for corrective maintenance, aircraft are designed to have direct support maintenance performed at certain periodic intervals. These intervals range from 150 to 500 flight hours. The aircraft may be in the shop for 15 to 60 days for completion of this scheduled maintenance depending on parts availability. Ground equipment is designed to avoid support maintenance, but aircraft are designed to need support maintenance.

While all equipment requires repair parts and their requisitions must go through DISCOM, aviation class IX items have some unique characteristics. Only the aviation maintenance

system tracks major CL IX items and components by serial number throughout their life cycle. This tracking is separate from supply channels, and has a specially designed CL IX management and visibility system called the Aircraft Intensively Managed Item (AIMI) program which is designed to control the most critically short and high cost items used only in aircraft maintenance. Direct support (AVIM) aircraft maintenance requirements are unique; and for responsive support, certain requirements of the aviation Class IX system are managed totally separate from other, more common division parts.

Also unique are the management and tracking requirements for readiness capability of aircraft. Aircraft operational readiness is tracked by hours. Vehicles and other equipment are tracked only by days. Obviously any aircraft maintenance downtime is much more sensitive to status reporting visibility than any other division equipment and consequently requires more responsive support.

Another major difference between aircraft maintenance and all other division maintenance is the requirement to document every repair action meticulously. For all critical items and actions, known as "red x" conditions, a quality control technical inspector must inspect and approve every step of the work. The margin of allowable error is far smaller than for other division maintenance.

As should now be evident, all maintenance is not created equal. Indeed, no other maintenance is as sensitive or highly

visible as that for aircraft and none places such a high premium on responsive support because of hourly availability tracking. This could be construed as making a case for a very specialized and experienced, overall aviation expert in the division.

Aviation experience is vital to understanding and appreciating the nuances of the multi-million dollar aircraft systems, both in order to employ them tactically and to support them logistically. From the first day a student aviator is on the flightline, he is sensitized to the unique demands and criticality of aviation and aircraft maintenance and the importance of responsive support. Throughout his career, an aviator has had to deal with the special constraints of aircraft maintenance. Unlike the non-rated DISCOM commander concerned primarily with ground vehicles, an aviator's daily life depends on quality aircraft maintenance. An aviator has more to lose and more to gain when he controls his own maintenance. The DISCOM commander is not normally aviation qualified or aviation oriented, but the CAB commander is.

Aviation familiarity and experience is considered important in providing responsive support for aircraft maintenance. Any potential AMC commander would have been brought up in a system that fosters and understands this, until he reaches his AMC command. He then must work for a dual chain of command. One is the <u>informal</u> chain in the CAB, within which his primary mission falls. The CAB chain of command, which is usually geographically collocated with the AMC, fully understands what is required for

responsive support of its aircraft since the CAB's mission accomplishment depends on responsive support from the AMC. The "official" chain of command is the AMC commander's formal non-aviation chain, through which he is rated, managed, and controlled by a usually geographically displaced DISCOM commander. If the AMC was placed under the CAB, the AMC commander's professional performance would now be rated by a commander whose unit mission depends on how well the AMC performs its mission of providing responsive support.

The limited 50% mobility of the AMC as compared with the rest of the CAB is said to slow the CAB down. The AVIM has never had to be as mobile as the CAB to give it adequate support because of the very nature of highly mobile, flexible, and responsive aviation. An aircraft can either conduct a sling load recovery of the CAB aircraft to the AMC or carry the AMC maintenance support team (MST) to the CAB aircraft. This limited mobility in no way hampers responsive support.

Another unwritten rationale for AMC assignment to the DISCOM is a perceived need for an "honest broker" in aviation maintenance because the CAB Commander may "abuse" his aircraft by overflying or excessively deferring maintenance, letting mission accomplishment override sound maintenance practices. Two controls prevent this: the first has already been mentioned in discussing how an aviator's life depends daily on aircraft maintenance and the second point is that whenever the operator (CAB commander) is made responsible for operationally ready (OR)

rates, the aircraft are not abused. With the AMC in the DISCOM and because of the indistinct overlap between AVUM and AVIM maintenance, the maintenance and readiness responsibility is split, causing confusion as to who should directly be held responsible.

Before concluding, yet another reason for reassigning the AMC to the CAB will be discussed. The AMC C2 structured in the DISCOM has neither consolidated maintenance nor kept aviation centralized in the division, for now there are two AMC organic aircraft also in the DISCOM. The implications for aviation safety and for the DISCOM commander should be investigated further, since all CAB commanders and aviation battalion commanders are required to be rated as instructor pilots in one of their predominant aircraft in order to better monitor their aircrew training programs. For the DISCOM commander to perform these functions he must become knowledgable about a vast array of aviation regulations and restrictions to which he has not been exposed and even then he still would be non-rated and unable to fly. Aviation training, flight records, flight operations, flying hour programs, and a host of other requirements will require lengthy memoranda of agreement between the DISCOM and the CAB, because neither the AMC nor the DISCOM have the specialized personnel to handle these functions. Aviation is very complex and specialized, and requires close supervisory expertise not found within the DISCOM staff. It is much less complex to leave

the aviation assets and responsibility consolidated under one expert, the CAB commander.

CONCLUSION

In the early 1960's under ROAD organizations, aviation was decentralized throughout the division. The TAMC at that time worked under the newly formed DISCOM. This was a very logical TAMC placement, since there were many separate commands with aircraft competing for limited, centralized support maintenance under an impartial DISCOM commander. The ROAD organization was not, however, the most efficient use of aviation, so with Vietnam, ARCSA III, and Division 86, aviation was centralized. Experience had proven this worked best, as did structuring C2 of the AMC directly under the aviation commander. The AOE C^2 structure, with its weak, untested rationale, stepped back in time using outmoded C^2 structure for the AMC in support of the newest, most maneuverable, and most flexible boost to combat power within the division--the CAB.

The professional soldiers in the Army can make almost any C^2 structure work to accomplish the mission. Why make the objective of responsive support as hard to achieve as has been done in the AOE? The command and control structure of the divisional aircraft maintenance company was not broken under ARCSA III and Division 86 and the Army should not have fixed it by moving it under the C2 of the DISCOM. The opinions and remarks of

experienced aviation unit commanders and the results of unit evaluations call for shifting the AMC back under the C2 of the CAB, where it can best support AirLand Battle. Since responsive support is the objective, the fewer the layers of C2 between a support provider and the customer, the better. No further study is necessary. Enough evidence is in. But what will this cost in personnel and resources?

This is one of the rare force structure improvements that can be made at no cost in personnel spaces or equipment. Time is critical, however, because units in the field, aviation maintenance officers, and their only customers, the aviation commanders, are losing the teamwork and cohesion and learning bad habits by spending unnecessary energy forcing a malstructured force structure to work. Change the C2 of the AMC to the CAB. This is one lesson of history we don't have to relearn!

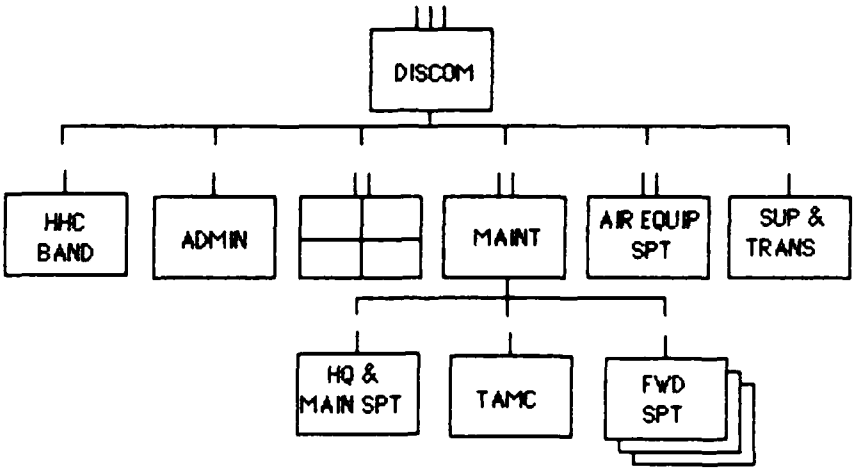

Figure 1. ROAD DIVISION DISCOM WITH TAMC

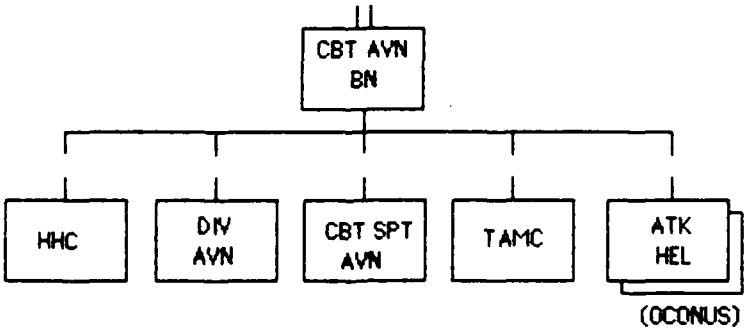

Figure 2. ARCSA III DIVISION AVIATION BN WITH TAMC

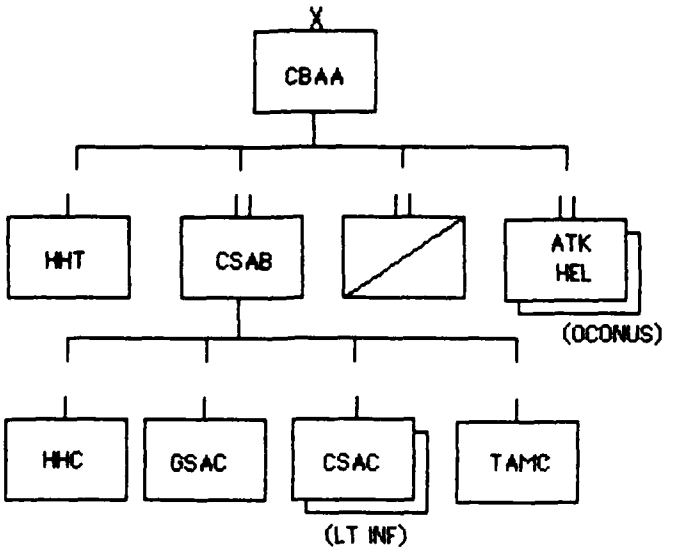

Figure 3. DIV 86/ACAB/CBAA W/TAMC IN CSAB

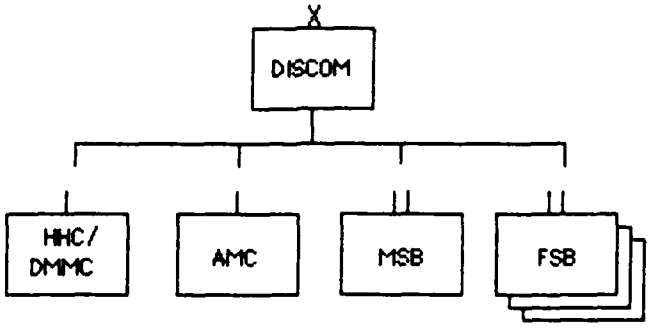

Figure 4. AOE DIV W/AMC IN DISCOM

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